A Further Update

Introduction

I have been working on putting together a research project to transition away from my current "day job". Details are available in a fairly accessible format online at https://archive.org/details/FixingPotholes in the Internet Archive that open the discussion. Donations are accepted at https://www.generosity.com/education-fundraising/fixing-potholes-of-the-information-superhighway. For now it is perhaps appropriate to talk about some of the "technical debt" that this research project would explore. There is much more to this than it seems at first glance.

While it was originally intended to post this to the fundraising page, the character limit there prevented it. Apparently the server hosting my blog is also off-line. As such it is only appropriate to log this at the Internet Archive for now.

Discussion

Now, let us talk about this research project some more. There is always background that you don't want to overwhelm people with. Generally you want to go with just an "elevator pitch". In this case, though, there is a complex story as to what is going on. Substantiation, attribution, experiential testing, and qualitative analysis are only the next stop.

Outernet seems like a great idea that innovates by providing caches of Internet content via satellite which is currently done by teleport uplink to a Galaxy-series geostationary satellite. It could easily be called a Web 3.0 idea. The problem is that it is not original whatsoever. It has predecessors that had to exist before something like Outernet could launch.

One predecessor we cannot overlook is AMSAT OSCAR 16 which is otherwise known as PACSAT. This project, sponsored by a private group of ham radio operators, was our planet's first floating file server providing content at a blistering 1200 bits per second. Three other floating file servers would follow. As ham radio operators are allowed to not just receive communications from satellites from them but also transmit, a protocol suite actually existed to upload and download files.

Another predecessor we cannot overlook is datacasting such as one of the many abortive non-PC tech projects undertaken by Microsoft. Wikipedia has some of the remaining information currently accessible about MSN Direct and the "DirectBand" program by Microsoft where they undertook one-way streaming of data via leased subaudible subcarriers on FM radio transmitters. US broadcasting consortium PBS also transmits data in a similar fashion as do state affiliates. An old analog NTSC television signal was 6 megahertz wide so there was space to stick a data subcarrier or two in the mix compared to the baseband signal. With current ATSC digital television technology it is all a data transmission so the signal is just multiplexed to include a non-viewable data stream.

The third predecessor we have to consider is HBO. HBO was one of the first satellite-based television networks. It also get hacked at the teleport. Somebody calling themselves "Captain Midnight" was able to override HBO's uplinked signal with their own. This resulted in changes to uplink technologies as well as introducing some opacity and non-reviewability by others as to what is being uplinked. Some relevant links will be included herein.

Now, let us turn to Outernet. From our preliminary yet cursory look at history, we find that Internet-based caches of content being distributed is just a variation on a theme launched almost 30 years ago. While this is rooted in the legacy of PACSAT it isn't directly interactive by participants so it still fits in datacasting rather than the two-way potential of PACSAT. There is a website where you can nominate content to be included in the transmissons but no way to verify if they get selected. The Galaxy satellite used is in a geosynchronous orbit compared to PACSAT's sun-synchronous orbit so the receiver tech hooked up to a Raspberry Pi single board computer used by Outernet ground stations does not have to be as complex.

Outernet was denied funding and launch space by NASA to launch their own "cubesats" or microsatellites to mimic PACSAT. That's why they're leasing time on a Galaxy-series transponder. Terms of the lease are not disclosed. Outernet still has a goal of launching their own bird. As noted recently in a report by the American Radio Relay League, apparently only half of cubesats succeed in orbit. Relevant links will be included herein.

Nothing says that what Outernet is doing cannot be duplicated. Could a church with global missionary reach set up their own such datacasting enterprise? One missionary pressure group is already experimenting using shortwave radio to do something like this.

So where does the research need to go? The backstory needs fleshing out. There is a forgotten history that even makes something like Outernet possible as software alone doesn't do the trick. Evaluating what they've got in space is the next step against reception-hostile conditions in the northern hemisphere. Frankly the south shore of Lake Erie fits rather well for that. With training as a librarian, review of their "collection development" choices and methodology let alone the possible lack thereof would be important. Overall there is a story to tell.

I hope to be able to walk away from my current work to be able to tell this story.

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Done at Ashtabula this 25th day of June in the year of our Lord 2016.
Stephen Michael Kellat